



Phoenix, A Decision Support Tool For D&D Activities



Developer: Arrey Industries Corporation/FedTech, Inc.
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Crosscutting Area: N/A

Deactivation & Decommissioning FOCUS AREA

Problem:

Over the next decades, the U.S. Department of Energy (DOE) will perform deactivation and decommissioning (D&D) activities at thousands of buildings and structures at its facilities across the country. D&D planners must evaluate the strategic options available for each of these facilities, select an option for a facility, prepare a detailed plan to carry it out, and then execute each facility plan. They need data and tools to assist in this planning, especially data and tools that permit planners to respond quickly to changes (e.g., regulatory changes, technology developments, budget and cost changes) in the external or internal environments that can affect their plans. They also need data and tools that provide current information on the performance of D&D efforts at DOE facilities and on lessons learned from these efforts.

To support the costing, scheduling, and decision-making activity it encompasses, this planning process requires extensive information related to: D&D tools, instrumentation, and protective equipment; characterization,

decontamination, and dismantling processes, including remote operations; waste types, waste processing, secondary waste streams, and waste volume reduction; and industry standards and government regulations. In addition, useful algorithms are required to guide the planner through these myriad data to the optimum solution for the problem at hand.

Solution:

The D&D decision analysis tool will provide an integrated approach to D&D planning and execution through a computer based decision-support tool. By providing a well-organized, accessible, and quality-assured database of D&D related information on tools and processes, it uses a logical, technology-based approach to strategic and detailed planning.

Benefits:

►Provides quality-checked data (e.g., acquisition and operating costs, skill-level requirements, performance, applicability parameters, by-products generated) that characterize proven tools, processes, and regulations

applicable to the D&D problem

►To be distributed on CD ROM, the tool provides a graphical user interface (GUI) to access, browse, query, manipulate, and analyze the database

►Brings an efficient, consistent approach to evaluation of all types of nuclear facilities (e.g., reactors, processing canyons, diffusion plants)

►Improves standardization by facilitating the effective communication of methods, precautions, and lessons learned across the DOE complex

►Accepts input from lessons learned, including the impact of new technologies, for continuous process improvement

Technology:

The present effort has two major components, a D&D Technology Module and a D&D Survey Module. The D&D Technology Module provides a searchable compendium of nuclear D&D technology data, organized according to major categories of characterization tools, decontamination processes,



dismantling techniques, and waste-handling methods. It captures U.S. and international experiential data and lessons learned as well as an extensive library of technical descriptions of tools and techniques.

The Survey Module will provide D&D planners with a software tool to assist in the preparation, execution, and documentation of a site characterization plan. It will guide the user through the necessary DOE and NRC regulations and resource materials (e.g., the Decommissioning Resource Manual, NUREG/CR-5839). It will detail the planning and execution steps for a D&D strategy at the project level. It will assist D&D planners in each step of the site characterization process. Key steps in this process are as follows: conduct preliminary assessment, define characterization objectives, identify systems or components to be surveyed, identify data requirements, identify surveys to be conducted, identify sample data collection/measurement methods, identify equipment and instrumentation requirements, identify analysis techniques, and prepare reports.

The Survey Module will also assist the D&D planner by providing a capability to estimate the schedule, resources required (e.g., material, labor), and estimated outcomes (e.g., exposure levels, waste produced) to develop and execute a site characterization plan. It will link to key datasets within the D&D Technology Module to develop estimates of the schedule, resource requirements, and costs avoided with

a D&D strategy.

The Survey Module software will contain a relational database that documents accepted D&D data development steps and techniques and consistent data tables and reporting templates for data and reporting requirements that are common to all D&D sites (i.e., "site-independent" characterization data). D&D planners will be provided the capability to link "site dependent" characterization data to appropriate parts of the database.

This project has completed a revised D&D Technology Module, incorporating almost 500 technologies from 197 vendors. A beta-test version of the D&D Survey Module is planned for September 1998. This will be followed by integration of the two modules in December 1998.

Contacts:

This project is a collaboration of FedTech, Inc., NES, Inc., Arrey Industries Corporation, and Research Triangle Institute (RTI). FedTech and NES bring nuclear and regulatory expertise to the effort and lead the algorithm and data development portion of the project. Arrey and RTI bring software development and systems integration expertise to the effort and lead the software development portion of the project. For information on this contract, the contractor contact is:

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